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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,594	04/29/2002	Michel Devic	2988-693	8361

31684 7590 03/21/2005

ARKEMA INC.  
PATENT DEPARTMENT - 26TH FLOOR  
2000 MARKET STREET  
PHILADELPHIA, PA 19103-3222

EXAMINER

DOROSHENK, ALEXA A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 03/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/018,594

Applicant(s)

DEVIC, MICHEL

Examiner

Alexa A. Doroshenk

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17-38 is/are pending in the application.
- 4a) Of the above claim(s) 37 and 38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/29/02 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12-7-01.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 17-36, drawn to an apparatus.

Group II, claim(s) 37 and 38, drawn to a process.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the claims of Group I do not include the special technical features of Group II, the special technical feature being a reaction step using a gaseous reactant in the presence of a solid catalyst.

3. During a telephone conversation with Thomas Roland on March 16, 2005 a provisional election was made with traverse to prosecute the invention of Group II, claims 17-36. Affirmation of this election must be made by applicant in replying to this Office action. Claims 37 and 38 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 17-23, 26 and 30-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee (4,935,539).

With respect to claim 17, Lee discloses an apparatus comprising:

a cylindrical vertical reactor (10);

means for injecting (18) at the bottom of the reactor (10);

means for discharging (19) at the top of the reactor (10); and

a plurality of centrifugal turbines (13, 14) along a vertical agitating shaft (15).

With respect to claim 18; Lee further discloses wherein the turbines (13, 14) are arranged regularly along a single vertical shaft (15) (see figures 1 and 2).

With respect to claim 19, Lee further discloses wherein the reactor comprises counter-baffles (16).

With respect to claim 20, Lee further discloses wherein the reactor comprises a heat exchanger (20).

With respect to claim 21, it can be seen in figure 1 that the height of the reactor is between about 1.5 and about 10 times the diameter of the reactor.

With respect to claim 22, it can be seen in figure 1 that the height of the reactor is between about 2 and about 4 times the diameter of the reactor.

With respect to claim 23, Lee further discloses wherein the turbines are radial (see figures 1-3 and col. 4, lines 34-36).

With respect to claim 26, Lee further discloses wherein the number of turbines is between 2 and 20 (see figures 1 and 2).

With respect to claim 30, Lee further discloses wherein the turbines vanes (29) are arranged in radial formation (see figures 3 and 4).

With respect to claims 31-34, no further structural limitations are recited and therefor the claims continue to read on the apparatus of Lee. The manner of operating a device does not differentiate the apparatus claims from the prior art. MPEP 2114. The material worked upon also does not limit the apparatus claims. MPEP 2115.

With respect to claims 35 and 36, Lee further discloses wherein the reactor comprises at least one filter (20) external to the reactor.

6. Claims 17-19, 21-23 and 25-34 are rejected under 35 U.S.C. 102(b) as being anticipated by Shiraki et al. (4,243,636).

With respect to claim 17, Shiraki et al. discloses an apparatus comprising:

a cylindrical vertical reactor (1);

means for injecting (2) at the bottom of the reactor (1);

means for discharging (11) at the top of the reactor (1); and

a plurality of centrifugal turbines (5-8) along a vertical agitating shaft (4).

With respect to claim 18, Shiraki et al. further discloses wherein the turbines (5-8) are arranged regularly along a single vertical shaft (4) (see figure 1).

With respect to claim 19, Shiraki et al. further discloses wherein the reactor comprises counter-baffles (9).

With respect to claim 21, it can be seen in figure 1 that the height of the reactor is between about 1.5 and about 10 times the diameter of the reactor.

With respect to claim 22, it can be seen in figure 1 that the height of the reactor is between about 2 and about 4 times the diameter of the reactor.

With respect to claim 23, Shiraki et al. further discloses wherein the turbines are radial (see figure 2).

With respect to claim 25, Shiraki et al. further discloses wherein the turbines (103) can have one or more central openings (109).

With respect to claim 26, Shiraki et al. further discloses wherein the number of turbines is between 2 and 20 (see figure 1 and col. 5, lines 46-50).

With respect to claim 27, Shiraki et al. further discloses wherein the number of turbines is between 3 and 8 (see figure 1 and col. 5, lines 46-50).

With respect to claim 28, Shiraki et al. further discloses wherein the diameter of the turbines is about 0.2 to about 0.5 times the diameter of the reactor (col. 6, lines 37-41).

With respect to claim 29, Shiraki et al. further illustrates wherein the thickness of the turbines is about 0.07 to about 0.25 times the diameter of the turbines (see figure 2).

With respect to claim 30, Shiraki et al. further discloses wherein the turbines vanes (29) are arranged in radial formation (see figures 3 and 4).

With respect to claims 31-34, no further structural limitations are recited and therefor the claims continue to read on the apparatus of Shiraki et al. The manner of operating a device does not differentiate the apparatus claims from the prior art. MPEP 2114. The material worked upon also does not limit the apparatus claims. MPEP 2115.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (4,935,539), as applied to claim 17, and further in view of Weetman (6,334,705).

With respect to claim 24, Lee discloses all of the structure as discussed above with respect to claim 17, but fails to disclose wherein the turbines are flanged.

Weetman teaches impellers (turbines) for an axial mixer wherein the blades (12, 14, 16) are flanged (30, 32, 34) which are more effective in flow and dispersing one fluid into another (col. 1, lines 5-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the flanged blades taught by Weetman in the apparatus of Lee in order to have more effective flow and dispersion.

9. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraki et al. (4,243,636), as applied to claim 17, and further in view of Weetman (6,334,705).

With respect to claim 24, Shiraki et al. discloses all of the structure as discussed above with respect to claim 17, but fails to disclose wherein the turbines are flanged.

Weetman teaches impellers (turbines) for an axial mixer wherein the blades (12, 14, 16) are flanged (30, 32, 34) which are more effective in flow and dispersing one fluid into another (col. 1, lines 5-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the flanged blades taught by

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Weetman in the apparatus of Shiraki et al. in order to have more effective flow and dispersion.

**Conclusion**

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa A. Doroshenk whose telephone number is 571-272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Alexa A. Doroshenk  
Examiner  
Art Unit 1764